

1. A method of promoting eating appetite, or the gain or maintenance of weight, in a subject comprising administering an effective amount of MCH, or an agonist or fragment thereof, to said subject.

5 2. The method of claim 1, wherein said subject is underweight or exhibits less than normal eating behavior.

3. The method of claim 1, wherein said subject suffers from anorexia nervosa.

10 4. The method of claim 1, wherein said subject is currently or has been administered a treatment which results in decreased eating behavior.

15 5. The method of claim 1, further comprising diagnosing said subject as being at risk for any of less than normal eating behavior, wasting, or eating disorder.

6. The method of claim 1, wherein said subject is a human.

20 7. The method of claim 1, wherein said subject is administered a second dose of MCH, or an agonist or fragment thereof.

20 *Sub a3* 8 A method of inhibiting eating appetite, or the gain of weight, in a subject comprising administering an effective amount of an antagonist of MCH to said subject.

25 9. The method of claim 8, wherein said subject is overweight or exhibits compulsive eating behavior.

10. The method of claim 8, further comprising diagnosing said subject as being at risk for any of compulsive eating behavior, obesity, or eating disorder.

30 11. The method of claim 8, wherein said subject is human.

12. The method of claim 8, wherein said subject is administered a second dose of an antagonist of MCH.

35 13. The method of claim 6, wherein said antagonist is a peptide analog of MCH having at least 70% homology with MCH.

14. A method of evaluating a treatment for its effect on eating behavior comprising: administering the treatment to a melanocyte based assay system; determining if

00150006 00000000

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

- 5 15. The method of claim 14, wherein said treatment is the administration of an agent and said agent is any of a polysaccharide, a nucleic acid, a fat, polypeptide, or a peptide-mimetic.
- 10 16. The method of claim 14, wherein said agent is a polypeptide having at least 50% homology with MCH.
17. The method of claim 14, wherein administering said treatment to said second test system includes administering said treatment to an animal.
- 15 18. A method of evaluating treatment for its effect on eating behavior comprising: providing an animal, cell, or cell culture preparation, having a reporter gene linked to the promoter region of MCH; administering said treatment; and determining if there is an effect on reporter gene expression.
- 20 19. The method of claim 18, wherein said treatment is the administration of an agent and said agent is any of a polysaccharide, a nucleic acid, a fat, polypeptide, or a peptide-mimetic.
- 25 20. The method of claim 18, wherein said agent is a polypeptide having at least 50% homology with MCH.
- 30 21. A method of evaluating an agent for its effect on eating behavior, appetite, or the maintenance of weight comprising: providing an animal, cell, or cell culture preparation, which expresses MC3-R; administering the treatment to the animal, cell, or cell culture; and determining if there is a change in a parameter related to binding of a ligand to MC3-R.
- 35 22. A method of evaluating a agent for its effect on eating behavior, appetite, or the maintenance of weight comprising: providing a substrate to which MCH binds; contacting the substrate, MCH, and the agent; and evaluating the ability of the compound to promote or inhibit binding of MCH to the substrate.
23. A method of evaluating a treatment for its effect on eating behavior, appetite, or the maintenance of weight comprising: providing a subject animal; administering the

treatment; and determining if there is an effect on MCH RNA or protein levels, or eating behavior in the animal, provided that the treatment is other than surgical intervention or the oral administration of salt water.

5 24. A a method of evaluating an agent for the ability to bind an MCH polypeptide comprising: contacting the agent with the MCH polypeptide, or a purified preparation thereof; and evaluating ability of the compound to form a complex with the MCH polypeptide, provided that the agent is other than other than a rabbit polyclonal antibody.

10 25. A method for evaluating an agent for the ability to modulate an interaction of an MCH polypeptide with a second polypeptide comprising: (i) combining a second polypeptide (or preferably a purified preparation thereof), an MCH polypeptide (or preferably a purified preparation thereof), and the agent under conditions wherein in the absence of the agent, the second polypeptide, and the MCH polypeptide are able to interact, e.g., to form a
15 complex; and (ii) detecting the interaction, e.g., detecting the formation (or dissolution) of a complex which includes the second polypeptide, and the MCH peptide.

20 26. A method of evaluating an effect of a treatment to treat a disorder characterized by unwanted eating behavior, or a condition of under or overweight comprising: administering the treatment to a test cell or organism which carries an MCH transgene or misexpresses a MCH gene, and evaluating the effect of the treatment on an aspect of MCH metabolism.

25 27. A method of determining if a subject mammal is at risk for an MCH related disorder, a weight-related disorder, or an eating or appetite disorder comprising: detecting, in a tissue of the subject, the presence or absence of a mutation of an MCH gene or non wild type levels of MCH RNA or protein.

30 28. A method of making an MCH polypeptide comprising: altering the sequence or ring structure of an MCH peptide, and testing the altered peptide for the desired activity by administering it to an animal and determining its effect on eating behavior or weight.

29. A transgenic MCH cell or transgenic MCH non-human animal.

Rest

Add a4